

Combating cucurbit yellow stunting disorder virus

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U.S. Department of Agriculture (USDA) scientists are working to give melon growers some relief from cucurbit yellow stunting disorder virus, or CYSDV.

In 2006, Agricultural Research Service (ARS) plant pathologist Bill Wintermantel with the U.S. Agricultural Research Station in Salinas, Calif., and university colleagues identified the plant disease that growers in California's Imperial Valley and nearby Yuma, Ariz., noticed was spreading through their cucurbit fields. Cucurbit crops affected included cantaloupe and honeydew melons.

ARS is USDA's principal intramural scientific research agency, and this research supports the USDA priority of promoting international food security.

CYSDV, a whitefly-transmitted virus originally from the Middle East, was identified by Wintermantel and colleagues in the melon-production region of California, Arizona, and Sonora, Mexico, in the fall of 2006. They also identified CYSDV a year later in Florida. Though it remains unclear how the virus spread to California and Florida, virus samples taken from both regions indicate they are essentially genetically identical to one another, according to Wintermantel.

In an effort to assist growers, ARS horticulturist and research leader Jim McCreight at Salinas is working to develop CYSDV-resistant melons. McCreight describes as serendipitous his discovery in 2006 of resistance

to CYSDV in an exotic, salad-type melon from India that was being tested for resistance to another disease.

After screening more than 400 melon accessions from India in the field, McCreight found a few plants in several other vegetable-type melons from India that show promise for resistance to the virus. Work continues on developing a resistant melon that growers in the southwestern United States could plant.

McCreight's field tests showed that [disease resistance](#) can only be effective in the desert southwest when whitefly populations are controlled. According to McCreight, hundreds of whiteflies constantly feeding on the plants assure high frequency of infection by the virus. Continued feeding by the whiteflies, particularly in summer-planted melons grown in high temperatures (more than 100 degrees Fahrenheit in the daytime), further weakens the plants. The result is often complete loss of fruit yield and quality or plant death.

Melons from plants infected with CYSDV may appear normal, but often have reduced sugar levels, resulting in poor marketability. The virus is spread by the whitefly, *Bemisia tabaci*, a small, sap-sucking insect that carries the virus from plant-to-plant as it feeds.

Several local weeds and important alternate crops such as alfalfa and lettuce were identified as hosts of CYSDV. However, unlike cucurbits, these newly identified crop hosts were symptomless carriers of the virus and their yield was unaffected. Wintermantel and his colleagues found the [virus](#) is capable of infecting plants in seven plant families in addition to the Cucurbitaceae family.

More information: Read more about this research in the March 2011 issue of Agricultural Research magazine.

[www.ars.usda.gov/is/AR/archive ... mar11/melons0311.htm](http://www.ars.usda.gov/is/AR/archive...mar11/melons0311.htm)

Provided by United States Department of Agriculture

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